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(PTO ASSISTANCE)

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Application : 101764732 Examiner : Ullah GAU : 2874

From: J. Blaauw Location: IDC FMF FDC Date: 5/4/05

Tracking #: 06089245 Week Date: 3121105

DOC CODE	DOC DATE	MISCELLANEOUS
<input type="checkbox"/> 1449	_____	<input checked="" type="checkbox"/> Continuing Data
<input type="checkbox"/> IDS	_____	<input type="checkbox"/> Foreign Priority
<input type="checkbox"/> CLM	_____	<input type="checkbox"/> Document Legibility
<input type="checkbox"/> IIFW	_____	<input type="checkbox"/> Fees
<input type="checkbox"/> SRFW	_____	<input type="checkbox"/> Other
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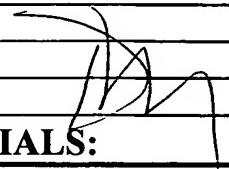
[RUSH] MESSAGE:

Application No 101239382 and PCT/G/B/1/01309 are listed on claim as continuing data but not contained in specification. Please make all necessary changes to specification.

Thank you!

[XRUSH] RESPONSE:




INITIALS:

NOTE: This form will be included as part of the official USPTO record, with the Response document coded as XRUSH.

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METHOD AND APPARATUS FOR GENERATING A PULSE WIDTH MODULATED SIGNAL AND OPTICAL ATTENUATOR CONTROLLED BY A PULSE WIDTH MODULATED SIGNAL

The present invention concerns a method of, and apparatus for, generating pulse width modulation (PWM) signals. More especially the invention concerns controlling temperatures of electro-optical components such as attenuators, filters and solid state lasers. For use in optical communication. Moreover, although not exclusively, the invention concerns an optical attenuator with an enhanced resolution for use in an optical communication system.

- 10 It is conventional practice to employ optical attenuators in optical communication systems for regulating and controlling the power of optical radiation propagating within the systems. Such attenuation is necessary in order to avoid saturating sensitive optical components such as detectors and optical amplifiers, as well as ensuring that optical radiation is of sufficient power not to be swamped by noise. Saturation can lead to loss of information and hence
- 15 errors in communication traffic conveyed by the systems.

Conventional optical attenuators employ a number of different optical component configurations, for example they can comprise one or more of Mach-Zehnder interferometers, modulated liquid crystal shutters and dispersion effect modulators. In

20 communication systems, it is particularly convenient to employ thermally variable optical attenuators whose optical attenuation is determined by attenuator temperature. Thus, attenuation can be selected in these thermally variable attenuators by adjusting their temperature.

- 25 Temperature adjustment is conveniently achieved by including thermoelectric elements into the variable attenuators. Such elements function by the Seebeck effect and can selectively cool or heat attenuation determining optical components incorporated within the attenuators. However, the elements often consume significant power in operation, for example 2.5 Watts corresponding to an electrical drive signal of 5 volts potential at 0.5 amps current.

- 30 Conventional optical communication systems are typically configured as a plurality of nodes interconnected by optical fibre waveguides through which communication traffic bearing

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This application is a division of serial number 10/239,382 filed February 4, 2003 now patent number 6,747,778, which is a 371 of PCT/GB01/01309 filed March 23, 2001